What is claimed is:

1. An autothermal reforming catalyst comprising a zirconia carrier carrying ruthenium.

2. An autothermal reforming catalyst comprising an inorganic oxide carrier carrying zirconium and ruthenium.

3. An autothermal reforming catalyst according to claim 1 ~~or 2,~~ which contains ruthenium in an amount of 0.05-20 wt.%.

4. An autothermal reforming catalyst according to ~~any one of claims 1 through 3,~~ Cl. 1 wherein the catalyst further contains cobalt and/or magnesium.

5. An autothermal reforming catalyst according to claim 4, wherein the cobalt content is 0.01-30 based on atomic ratio of cobalt to ruthenium.

6. An autothermal reforming catalyst according to claim 4 ~~or 5,~~ wherein the magnesium content is 0.5-20 wt.% as reduced to MgO.

7. An autothermal reforming catalyst according to ~~any one of claims 2 through 6,~~ Cl. 2 wherein the inorganic oxide carrier is formed of alumina.

8. An autothermal reforming catalyst according to claim 7, wherein the alumina is α-alumina or γ-alumina.

9. An autothermal reforming catalyst according to ~~any one of claims 2 through 8,~~ Cl. 2 which contains zirconium in an amount of 0.05-20 wt.% as reduced to ZrO_2.

10. A method for producing an autothermal reforming catalyst as described in ~~any one of claims 1, 3, 4, 5, and 6,~~ Cl. 1

which method comprises incorporating a solution containing ruthenium, a solution containing ruthenium and cobalt, or a solution containing ruthenium, cobalt and magnesium into a zirconia carrier and drying and calcining the carrier.

11. A method for producing an autothermal reforming catalyst as described in ~~any one of claims 2 through 9~~ Cl. 2, which method comprises incorporating a solution containing zirconium and ruthenium, a solution containing zirconium, ruthenium, and cobalt, or a solution containing zirconium, ruthenium, cobalt, and magnesium into an inorganic oxide carrier and drying and calcining the carrier.

12. A method for producing hydrogen or a synthesis gas by use of an autothermal reforming catalyst as described in ~~any one of claims 1 through 9~~ Cl. 1.

13. A method for producing hydrogen or a synthesis gas according to claim 12, wherein a starting material for producing hydrogen or a synthesis gas is a hydrocarbon.

14. A method for producing hydrogen or a synthesis gas according to claim 13, wherein the hydrocarbon is methane, liquefied petroleum gas, naphtha, kerosene, or gas oil.

15. A method for producing hydrogen or a synthesis gas according to claim 12, wherein a feedstock for producing hydrogen or a synthesis gas is methanol, ethanol, or dimethyl ether.

16. A method for producing a synthesis gas according to ~~any one of claims 12 through 15~~ Cl. 12, wherein a reforming gas comprises a mixture of oxygen, steam, and carbon dioxide.

17. A catalyst for reforming hydrocarbon by use of carbon dioxide, which comprises a zirconia carrier carrying ruthenium.

18. A catalyst for reforming hydrocarbon by use of carbon dioxide, which comprises an inorganic oxide carrier carrying zirconium and ruthenium.

19. A catalyst for reforming hydrocarbon according to claim 17 ~~or 18~~, which contains ruthenium in an amount of 0.05-20 wt.%.

20. A catalyst for reforming hydrocarbon according to ~~any one of claims 17 through 19~~ Cl. 17, which further contains cobalt and/or magnesium.

21. A catalyst for reforming hydrocarbon according to claim 20, wherein the cobalt content is 0.01-30 based on the atomic ratio of cobalt to ruthenium.

22. A catalyst for reforming hydrocarbon according to claim 20 ~~or 21~~, wherein the magnesium content is 0.5-20 wt.% as reduced to MgO.

23. A catalyst for reforming hydrocarbon according to ~~any one of claims 18 through 22~~ Cl. 18, wherein the inorganic oxide carrier is formed of alumina.

24. A catalyst for reforming hydrocarbon according to claim 23, wherein the alumina is α-alumina or γ-alumina.

25. A catalyst for reforming hydrocarbon according to ~~any one of claims 18 through 24~~ Cl. 18, which contains zirconium in an amount of 0.05-20 wt.% as reduced to ZrO_2.

26. A method for producing a catalyst for reforming

hydrocarbon as described in ~~any one of claims 17, 19, 20, 21~~, ~~and 22,~~ which method comprises incorporating a solution containing ruthenium, a solution containing ruthenium and cobalt, or a solution containing ruthenium, cobalt and magnesium into a zirconia carrier and drying and calcining the carrier.

27. A method for producing a catalyst for reforming hydrocarbon as described in ~~any one of claims 18 through 25,~~ which method comprises incorporating a solution containing zirconium, a solution containing zirconium and ruthenium, a solution containing zirconium, ruthenium, and cobalt, or a solution containing zirconium, ruthenium, cobalt, and magnesium into an inorganic oxide carrier and drying and calcining the carrier.

28. A method for reforming hydrocarbon by use of carbon dioxide and a catalyst for reforming hydrocarbon as described in ~~any one of claims 17 through 25~~.

29. A method according to claim 28, wherein the hydrocarbon is methane.

30. A method for reforming natural gas by use of a catalyst for reforming hydrocarbon as described in ~~any one of claims 17 through 25~~.

31. A method for reforming hydrocarbon or natural gas by use of a mixture of carbon dioxide and steam, and a catalyst for reforming hydrocarbon as described in ~~any one of claims 17 through 25.~~